

## Claims

- 1 1. A method for accessing a plurality of dynamic random access memory (DRAM) devices in  
2 parallel, each device having the same number of banks, in a parallel packet processor  
3 comprising:  
4     partitioning a data word into data segments;  
5     storing in parallel data segments of a data word into memory banks across a plurality of  
6 DRAM devices;  
7     retrieving the data segments of a requested data word in parallel from the banks of the  
8 DRAM devices; and  
9     reassembling the data segments into the data word.
- 10 2. The method of claim 1 further comprising retrieving a plurality of reassembled data words in  
11 the order of the sequence that their associated retrieval requests were received.
- 1 3. The method of claim 1 wherein the data word has a maximum word size.
- 1 4. The method of claim 1 wherein a data word includes a cell of a packet.
- 1 5. The method of claim 1 wherein the data word has a fixed word size.

6. The method of claim 1 wherein the data word has a variable word size.
7. The method of claim 1 wherein storing in parallel data segments of a data word into memory banks across a plurality of DRAM devices further comprises determining an in-bank burst length based upon the maximum word size, a total number of banks in the plurality of DRAM devices and the data width of an individual bank and storing the data word in a burst having the in-bank burst length.
8. The method of claim 1 wherein storing in parallel data segments of a data word into memory banks across a plurality of DRAM devices further comprises selecting a bank in each DRAM device for each data segment of the word and storing a data segment of the data word in each selected bank in parallel.
8. The method of claim 1 wherein storing in parallel data segments of a data word into memory banks across a plurality of DRAM devices further comprises selecting a bank in each DRAM device for each data segment of the word and storing a data segment of the data word in each selected bank in parallel.
9. The method of claim 1 further comprising scheduling the storing of the data segments independently on a per device basis.
10. The method of claim 1 wherein retrieving the data segments of a requested data word in parallel from banks across the DRAM devices further comprises:
  - determining the starting bank in each DRAM device storing at least one of the data segments of the requested data word; and
  - reading each data segment of the data word in each selected bank of in parallel.